



SWEN90016

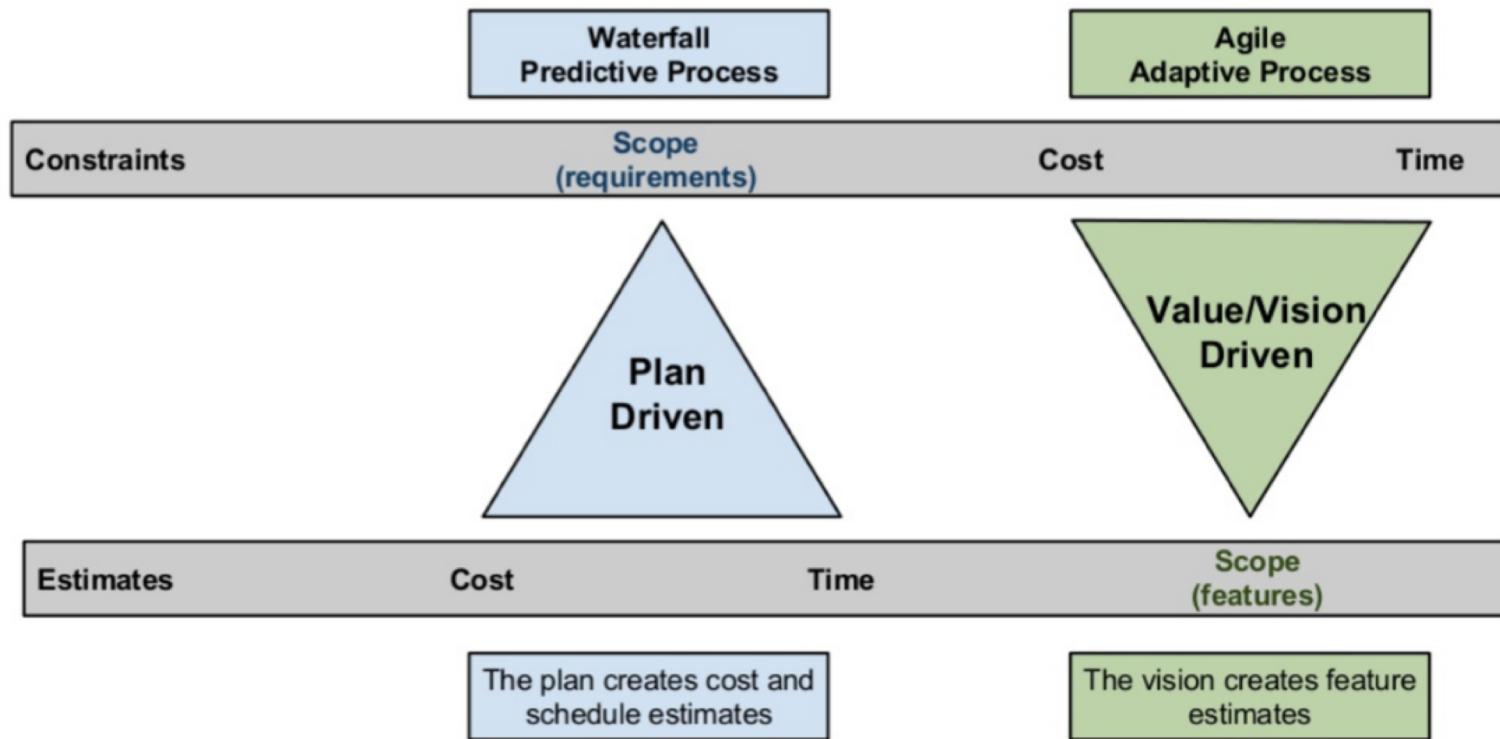
Software Processes & Project Management

Project Scheduling

2019 – Semester 1
Tutorial 5



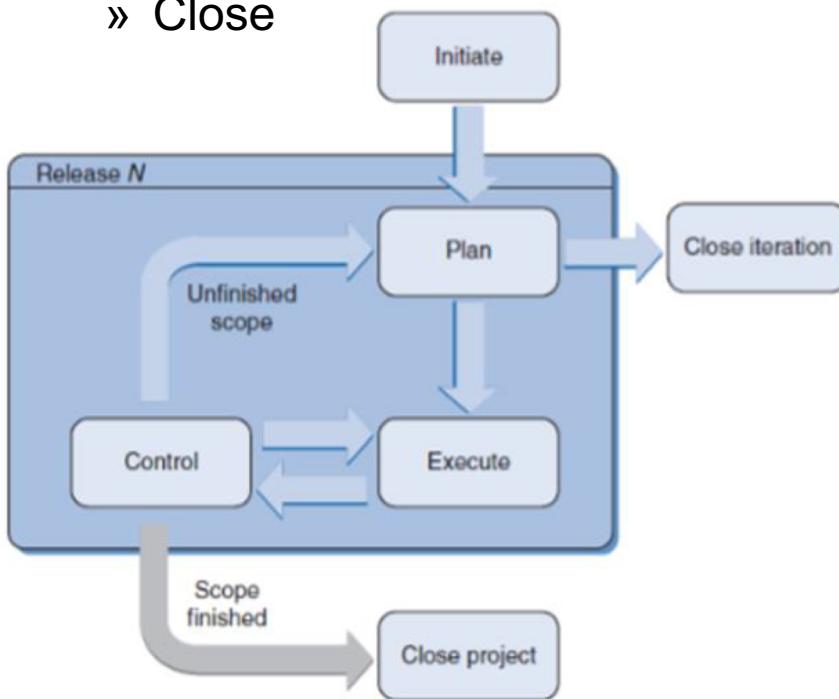
How to **plan** and **control** the **schedule** of software projects.





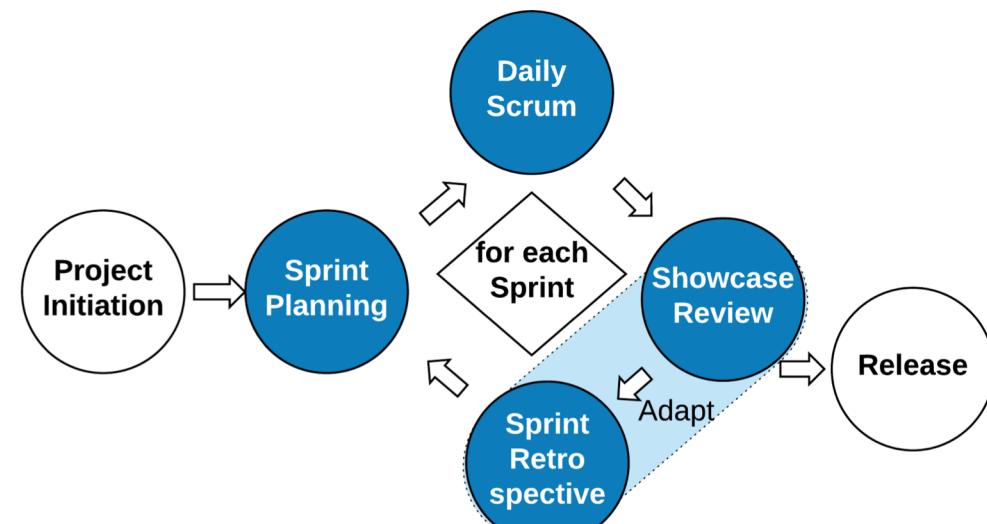
Formal PM Stages:

- » Initiate
- » Plan
- » Execute
- » Monitor & Control
- » Close



Agile PM Stages:

- » Initiate
- » Sprint Plan
- » Scrum (or Sprint)
- » Review & Retrospective (or Adapt)
- » Release





What steps are involved in developing a project schedule?

Identify tasks

(breakdown to tasks)

Identify dependencies

(task network tool)

Estimate duration & resources

(staff, hardware, artefacts)

Construct **schedule**

(allocate dates, resources)

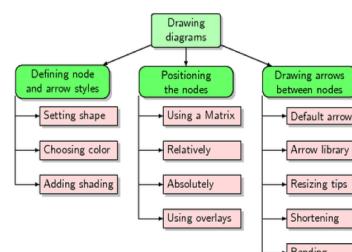
1. Breakdown the task into small chunks you can deal with – **Work Breakdown Structure (WBS)**
2. Identify the **interdependencies** between the broken down tasks and develop a **task network**
3. Estimate the **effort** and the **time allocation** for each task
4. **Allocate resources** for tasks and validate effort
5. Develop the **project schedule**

Lecture 6, Slide 20

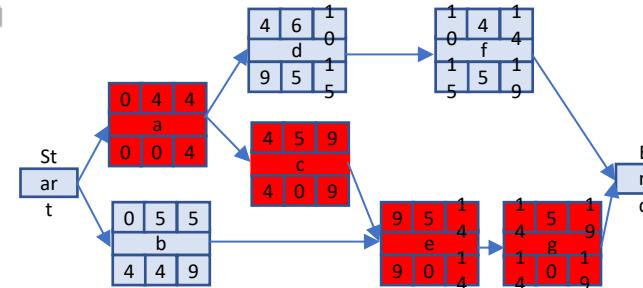


1. Work Breakdown Structure

Redecorate Room
Prepare materials
<ul style="list-style-type: none">Buy paintBuy a ladderBuy brushes/rollersBuy wallpaper remover
Prepare room
<ul style="list-style-type: none">Remove old wallpaperRemove detachable decorationsCover floor with old newspapersCover electrical outlets/switches with tapeCover furniture with sheets
Paint the room
Clean up the room
<ul style="list-style-type: none">Dispose or store leftover paintClean brushes/rollersDispose of old newspapersRemove covers

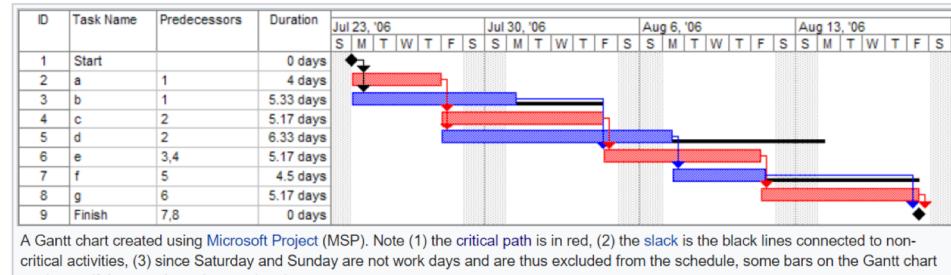


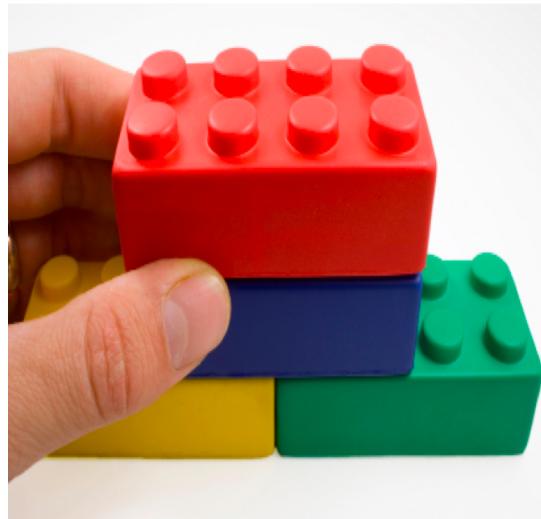
2. PERT Chart



how to plan
the schedule

3. Gantt Chart





Activity	Work Breakdown
1.	Concept Phase Concept Planning Initial Research Problem definition with client Initial Project Plan
2.	Requirements Requirements Iteration 1 2.1.1 Requirement Elicitation 2.1.2 Requirements Analysis 2.1.3 Requirement Model Requirements Iteration 2 2.2.1 Requirement Elicitation 2.2.2 Requirements Analysis 2.2.3 Requirement Model Requirements Specification Requirements Validation Requirements Sign-off
3.	Project Planning Technological Risk Assessment



Identify Dependencies

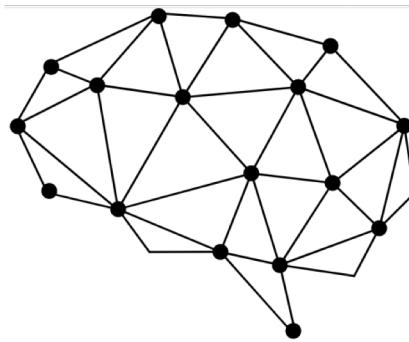
Activity & Work Breakdown

	Activity	Work Breakdown	Dependencies predecessor	Duration
1.	1.1 1.2 1.3 1.4	Concept Phase Concept Planning Initial Research Problem definition with client Initial Project Plan	1.1, 1.2, 1.3	1 4 2 1
2.	2.1 2.2 2.3 2.4 2.5	Requirements Requirements Iteration 1 2.1.1 Requirement Elicitation 2.1.2 Requirements Analysis 2.1.3 Requirement Model Requirements Iteration 2 2.2.1 Requirement Elicitation 2.2.2 Requirements Analysis 2.2.3 Requirement Model Requirements Specification Requirements Validation Requirements Sign-off	1.4 2.1.1 2.1.2 2.1.2 2.2.1 2.2.2 2.2.3 2.3 3.1, 2.4	2 3 3 3 3 4 5 4 4
3.	3.1	Project Planning Technological Risk Assessment	2.1.2	4



Activity on node

Develop a task network
(activity on node)
given dependencies

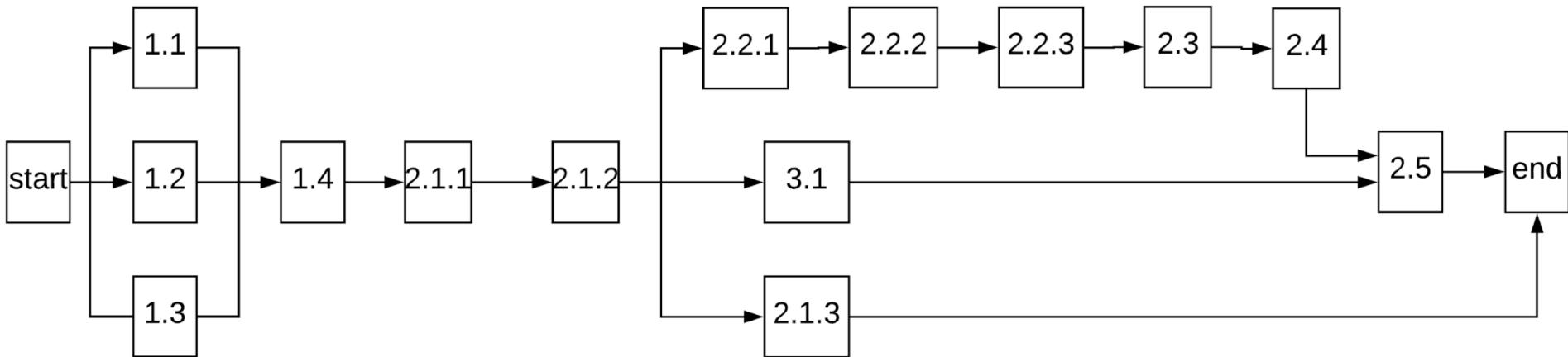


	activity	predecessor	duration
1	1.1		1
2	1.2		4
3	1.3		2
4	1.4	1.1 1.2 1.3	1
5	2.1.1	1.4	2
6	2.1.2	2.1.1	3
7	2.1.3	2.1.2	3
8	2.2.1	2.1.2	3
9	2.2.2	2.2.1	3
10	2.2.3	2.2.2	4
11	2.3	2.2.3	5
12	2.4	2.3	4
13	2.5	2.4 3.1	4
14	3.1	2.1.2	4



Network Diagram

- Sequential nodes
- Few details





PERT: Program Evaluation & Review Technique

ES	Duration	EF
Task Name		
LS	Slack	LF

The activity node

Earliest start time (ES)
Duration in people days
Earliest finish time (EF)

Latest start time (LS)
Slack time
Latest finish time (LF)



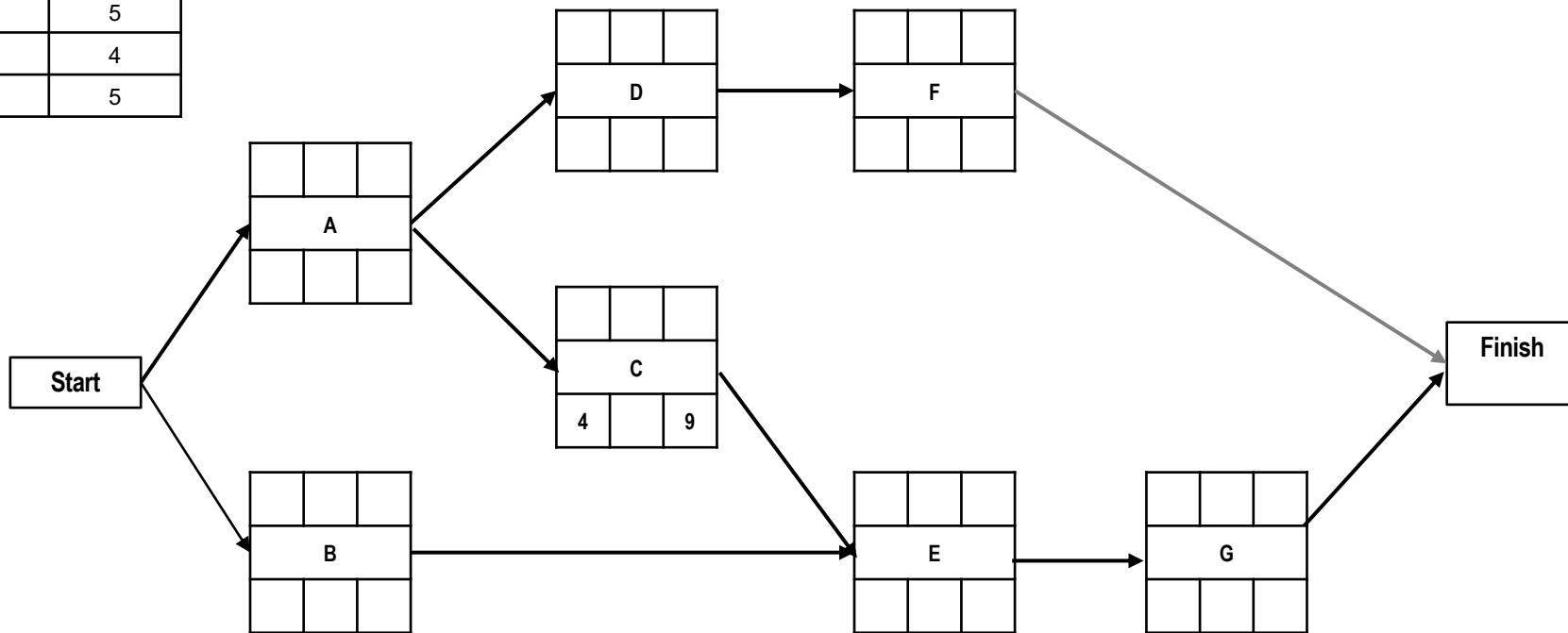
Available online

Show a PERT chart: use task durations & task network diagram

Activity	Duration
A	4
B	5
C	5
D	6
E	5
F	4
G	5

ES	Duration	EF
Task Name		
LS	Slack	LF

Task Network Diagram

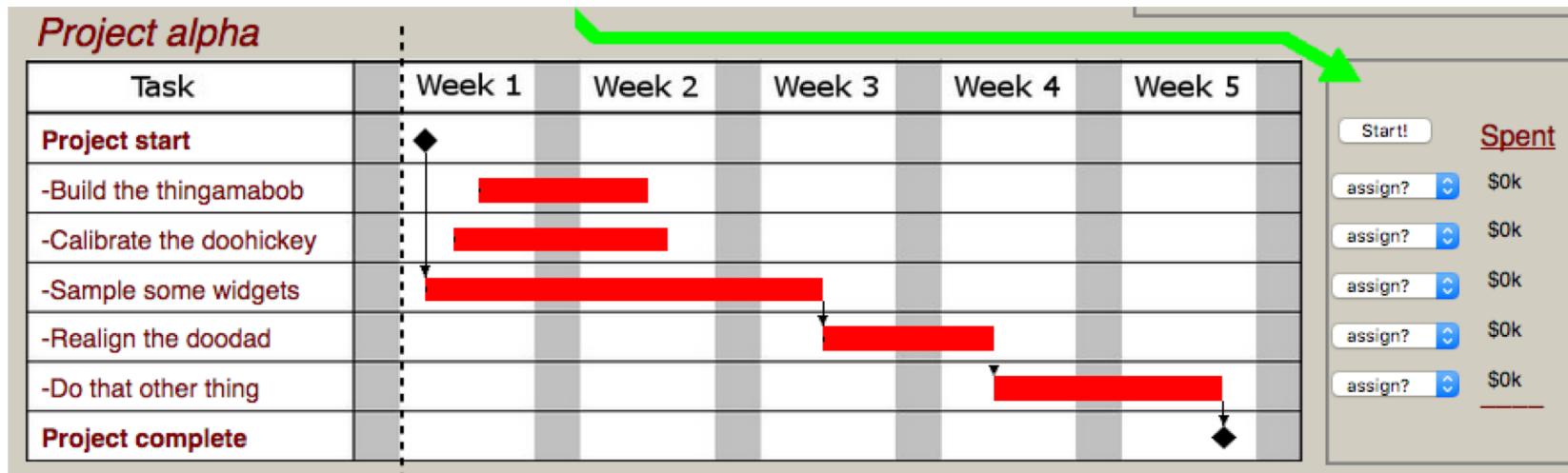




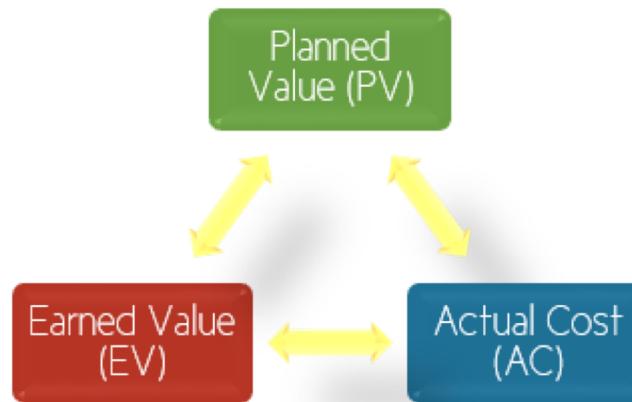
Available online

Play the Project Management Game:

<http://thatpmgame.com/>



Use a Gantt chart to assign staff to various tasks.
Is the project completed on time and on budget?



how to control

Planned Value
best assignment worth 30%

initial expected value of task

Earned Value
assignment not started, ...
- what is it worth ?

the current value of the task,
given 1) the expected work rate,
and 2) the work done up until now

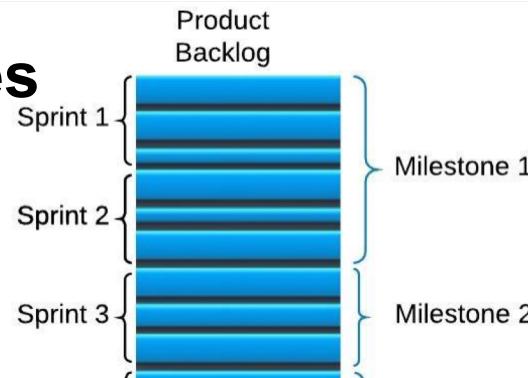
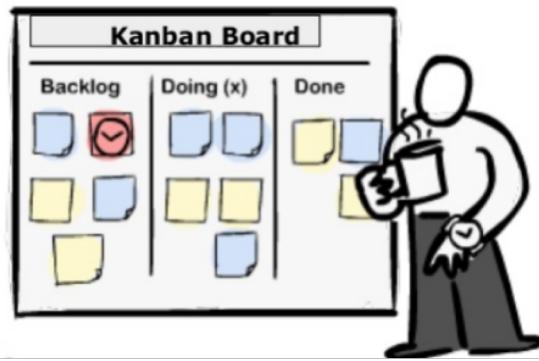
Actual Cost

final actual value of task



AVAILABILITY

1. Product Backlog with milestones



2. Sprint Backlog on Kanban board

3. Burndown Charts

how to plan
the schedule



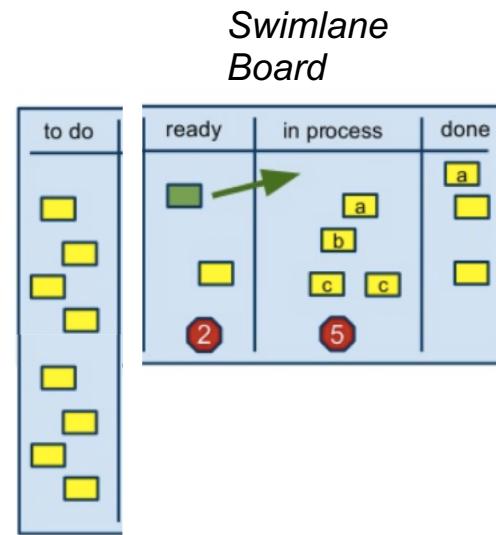
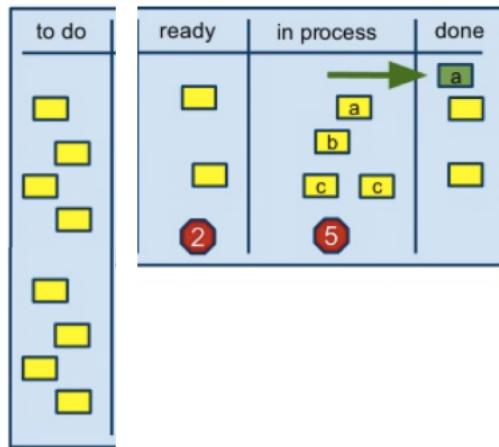
Velocity and Visual Board

WEEK 7: SCRUM

How many User Stories are “**done**” over the time-boxed Sprint?

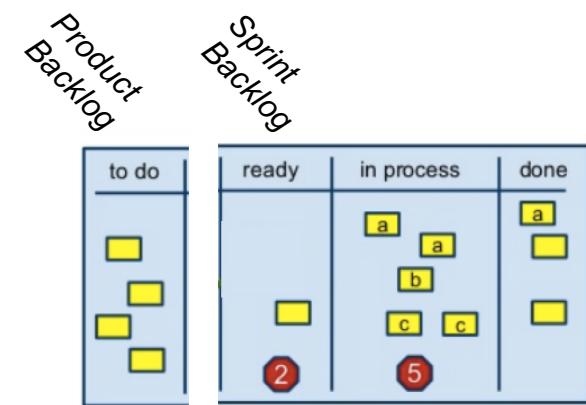
- Only count 100% complete stories
- Predict when the release milestones will be reached

From Lecture 7, slide 77



Team member A completes code for a card and moves it to “done”

Team member A “pulls” a new card from “ready” and moves it to “doing”

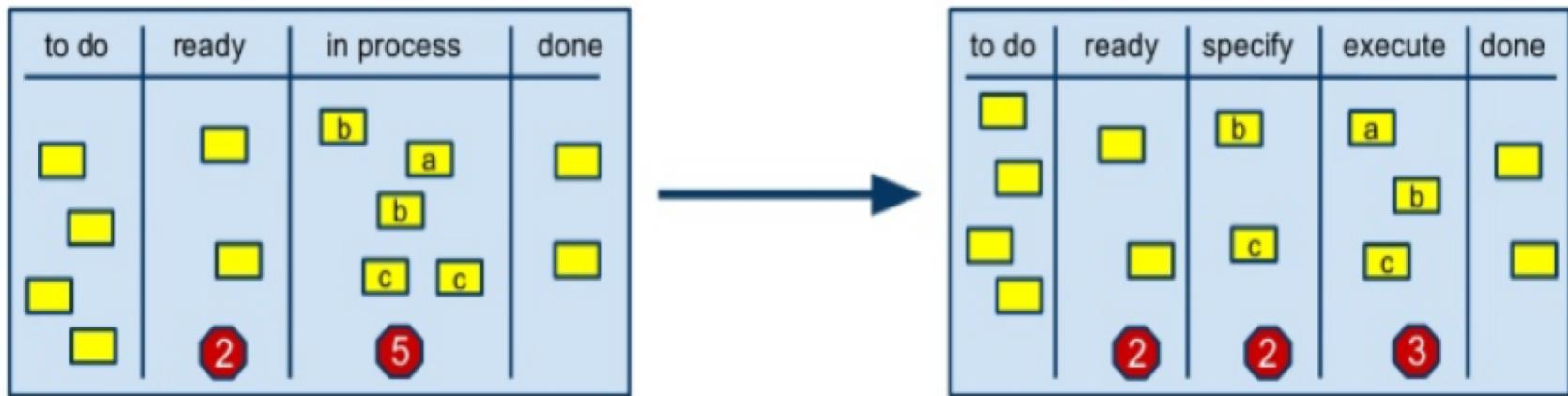


The Product Owner selects the next priority set of cards (Sprint Backlog) and moves it to “ready”



Velocity determines when dev team can deliver

- Dev team velocity emerges over a number of Sprints
- Predict when the release milestones will be reached

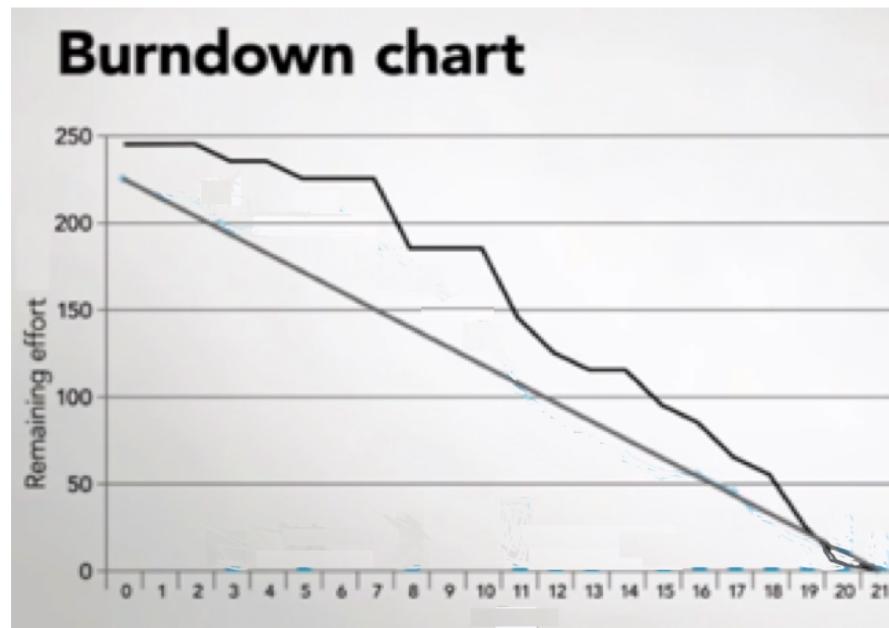




Velocity determines the slope of the BurnDown charts

- The Scrum master can track remaining effort
- Predict when the release milestones will be reached

Y-axis: effort



X-axis: time

next
week's
tutorial





Thank You!

